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A63B 21/072

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(56) Documents Cited:
GB 2186500 A **US 6142918 A**
US 5484367 A **US 5102124 A**

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Other: Online : WPI, EPODOC, JAPIO

(54) Abstract Title: **Weightlifting apparatus**

(57) Weightlifting apparatus comprises a bar 10 and at least one weight 11 removably supportable on each end of the bar. The weight is substantially disc-shaped and has a substantially flat peripheral edge portion 12 so that it may be supported on a flat surface without rolling. The weight may have a D-shaped aperture and the bar provided with a cooperating surface so that the weight may be retained on the bar in a predetermined angular orientation. A clamp 13 may be provided to retain the weight on the bar.

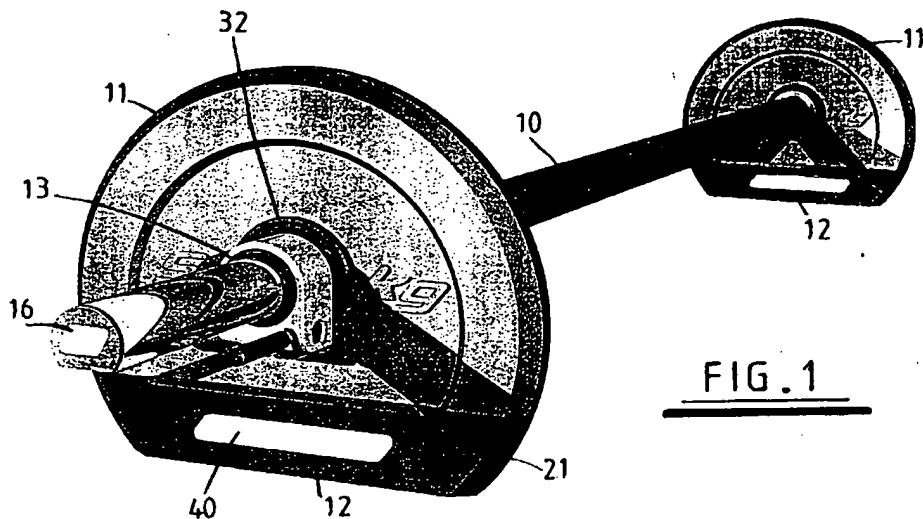


FIG. 1

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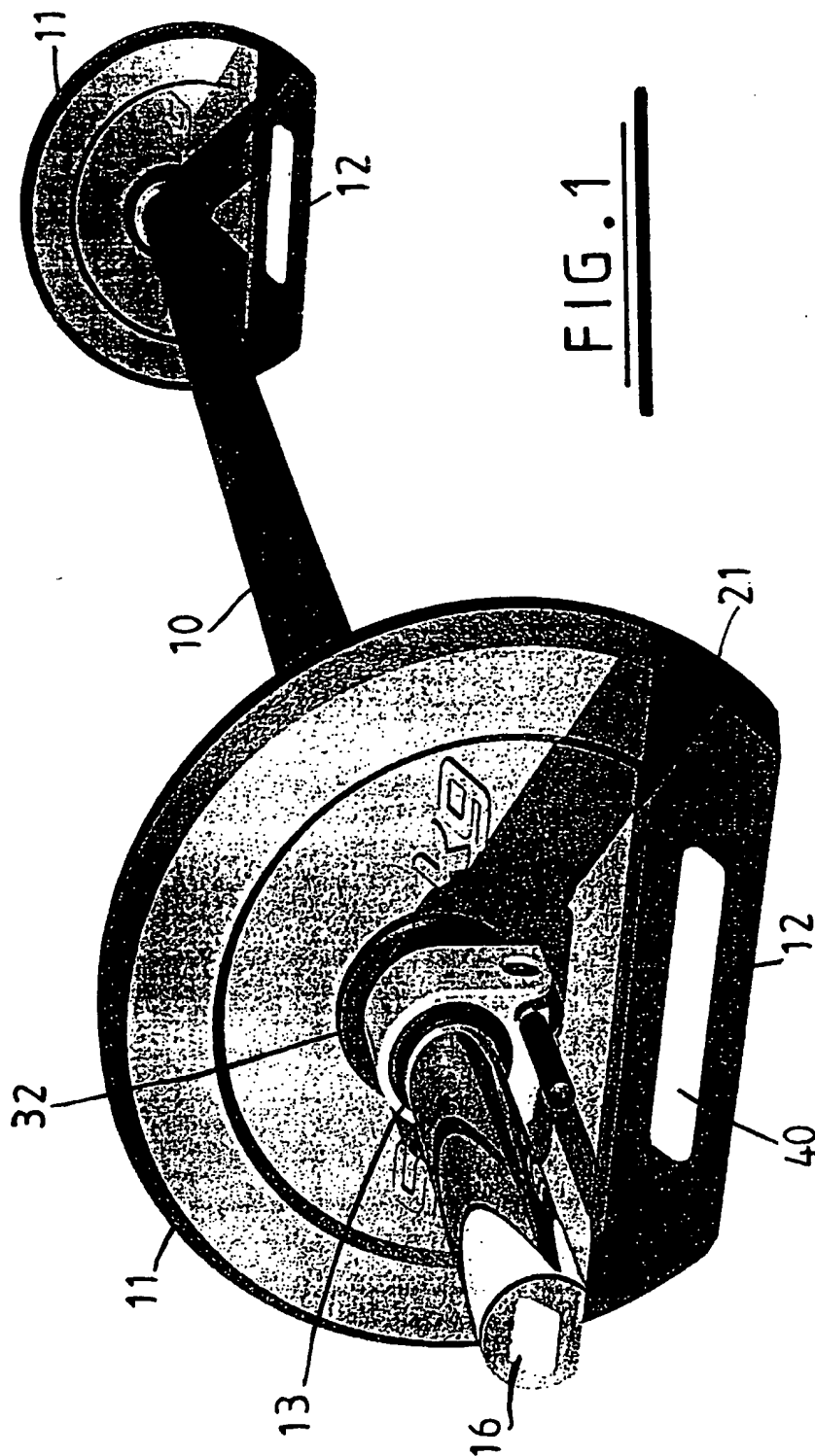


FIG. 1

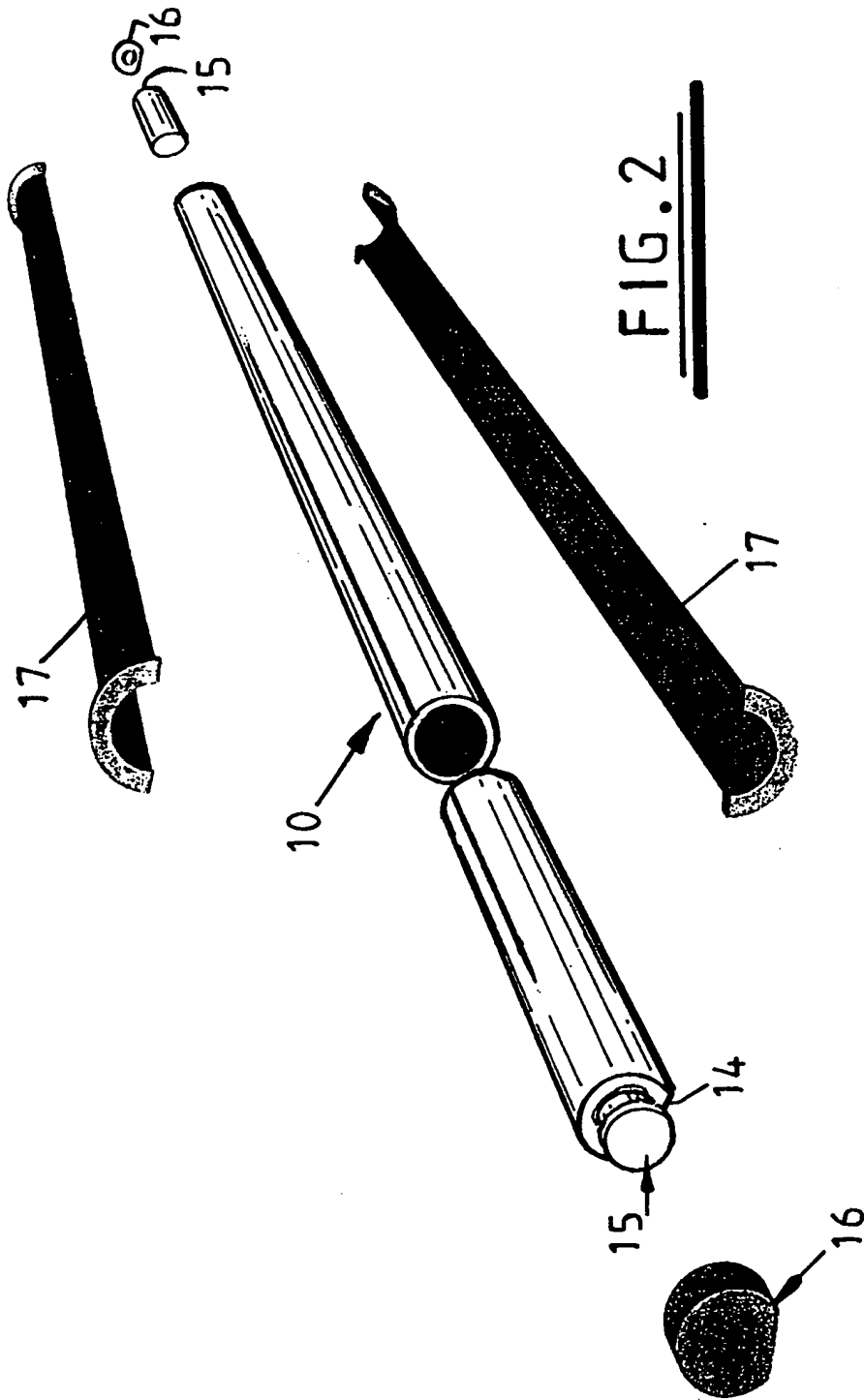


FIG. 2

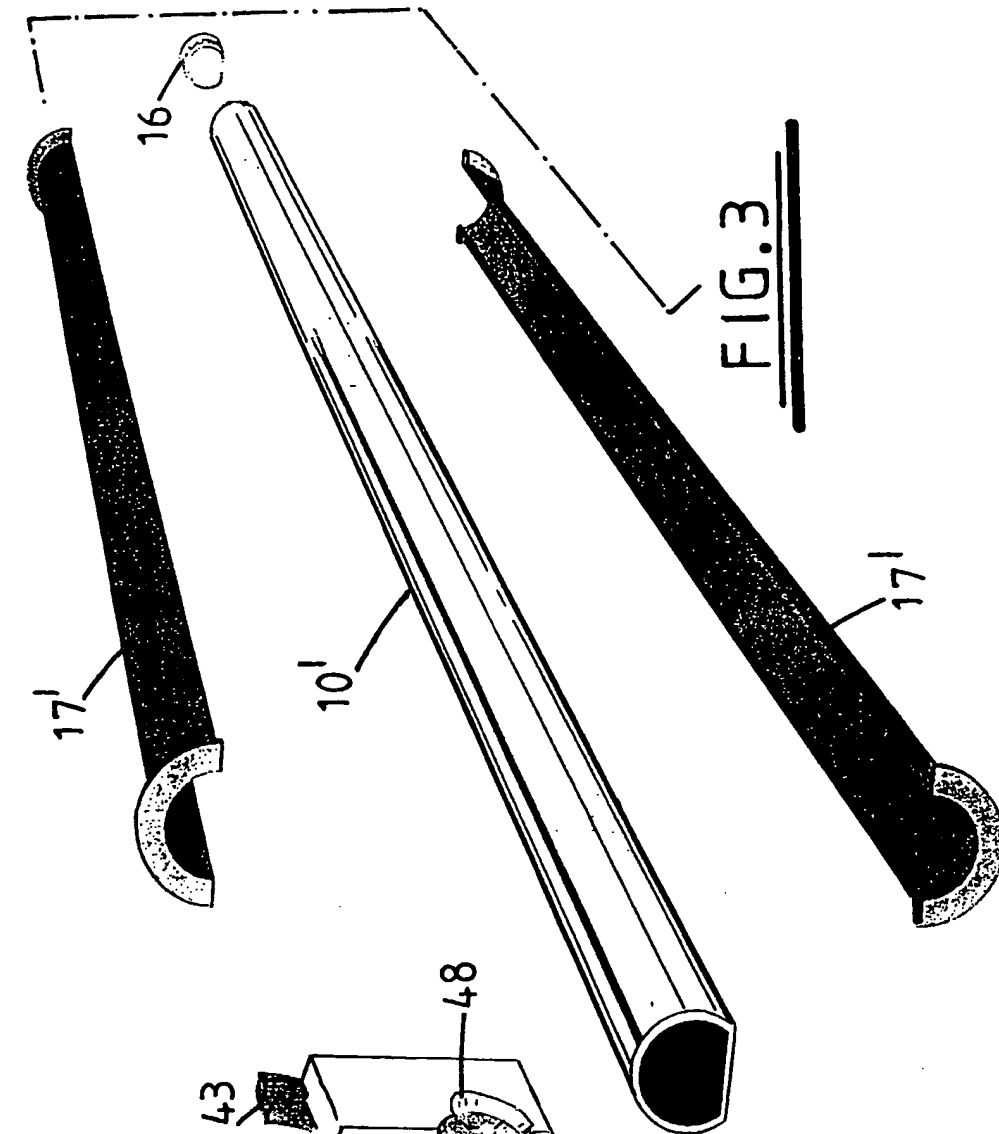


FIG. 3

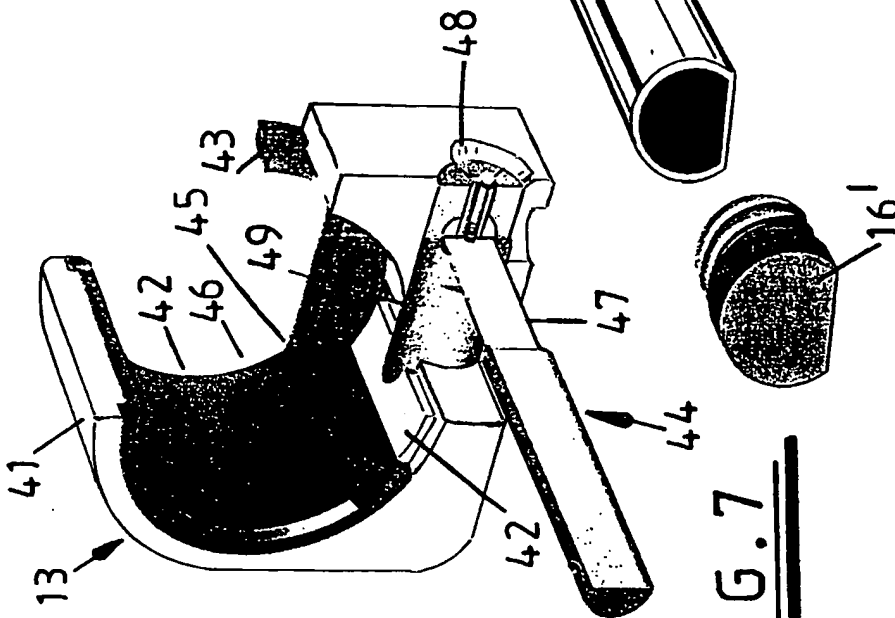
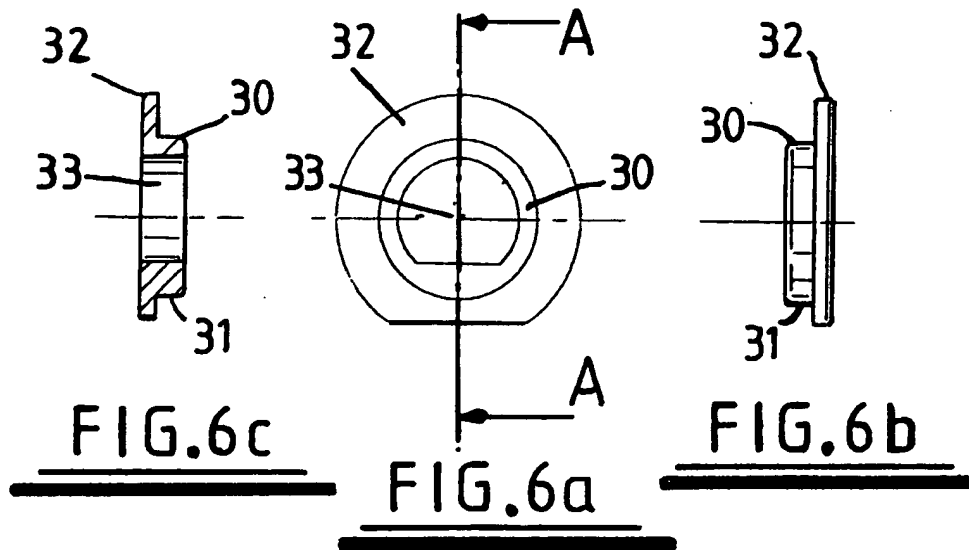
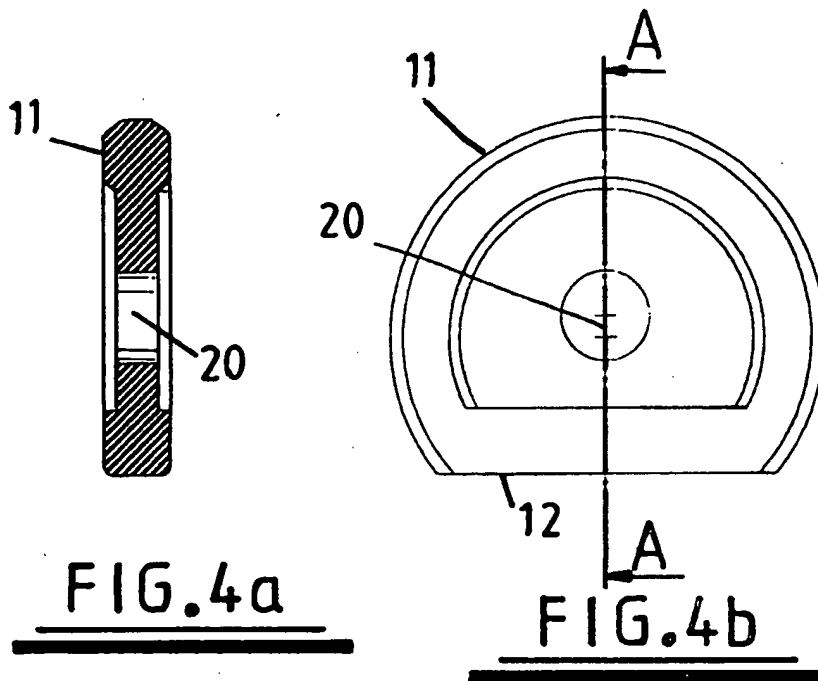


FIG. 7



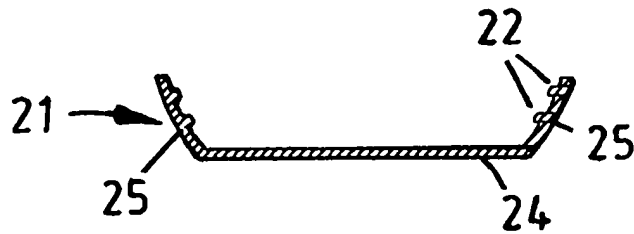


FIG. 5c

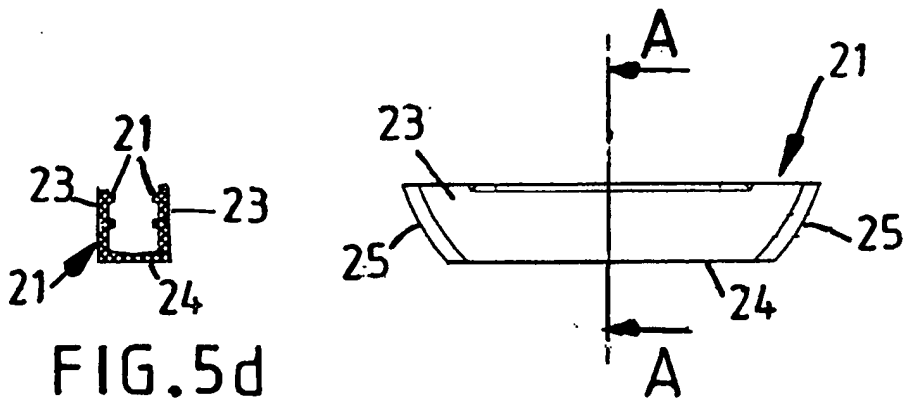


FIG. 5d

FIG 5a

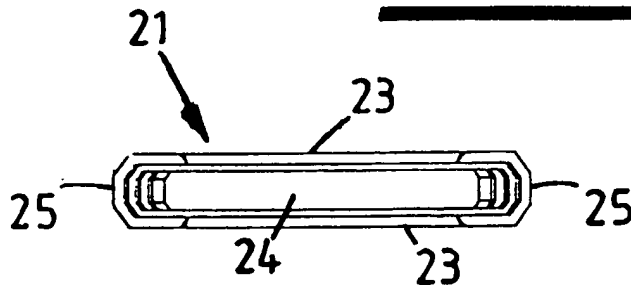


FIG. 5b

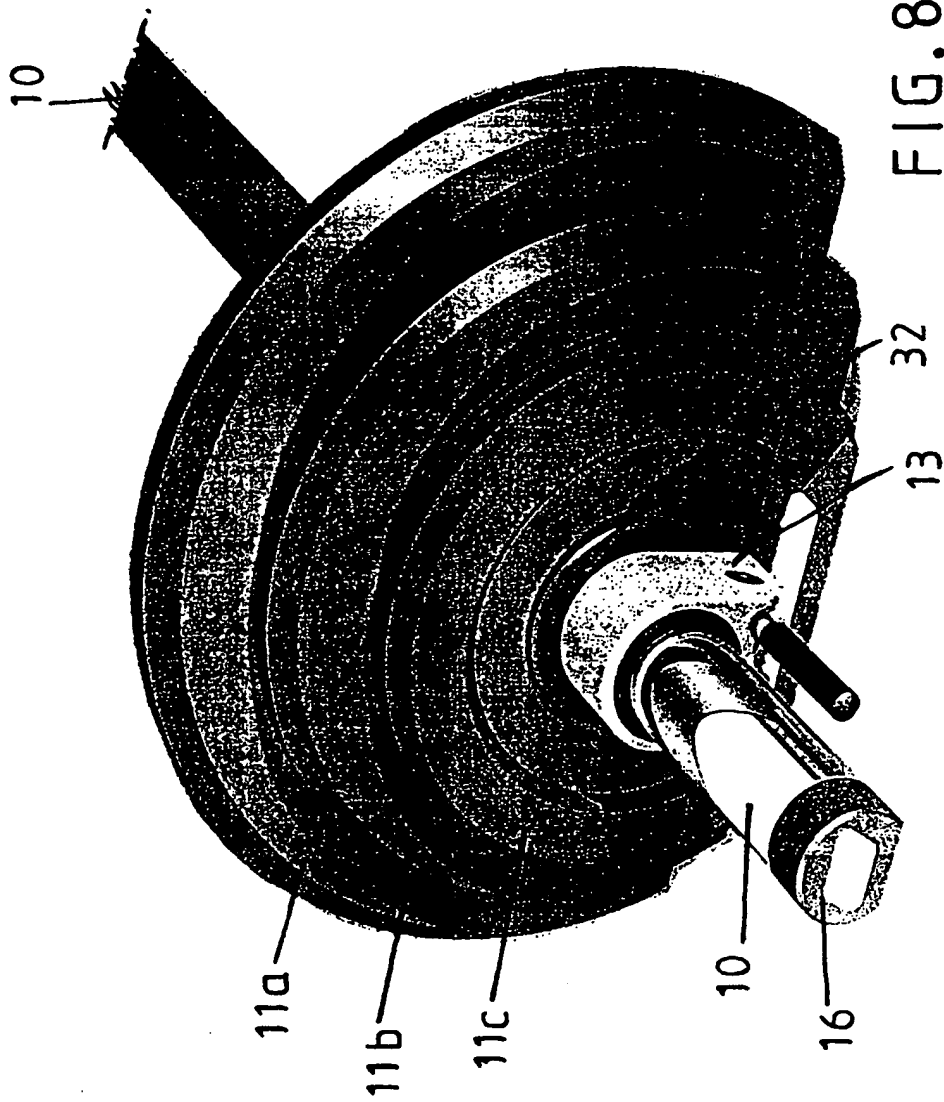


FIG. 8

WEIGHTLIFTING APPARATUS

The present invention relates to weightlifting apparatus of the kind used in bodybuilding or physical training.

Weightlifting apparatus typically comprises an elongate, rigid, metal, round bar which supports, at each end, a removable weight in the form of a disc with a central aperture in which the bar is received. A selection of different weight discs is usually provided so as to enable a user to select the required weight to be lifted. Several discs may be mounted on each end to achieve the desired weight. When the apparatus is not in use it is usually supported in a cradle.

According to a first aspect of the present invention there is provided weightlifting apparatus comprising a bar and at least one weight removably supportable on each end of the bar, the weight being substantially disc-shaped and having a substantially flat peripheral edge portion so that it may be supported on a flat surface without rolling.

The weight preferably has an aperture in which the bar is received, the weight and bar having co-operating surfaces that serve to retain the weight on the bar in a predetermined angular orientation. The co-operating surface of the weight may be defined on a removable interface member that is connected into the aperture of the weight. The aperture in the weight may be substantially D-shaped or alternatively may be substantially circular and the removable interface member has a substantially circular outer surface and a substantially D-shaped aperture.

The bar may have at least a portion that has a D-shaped cross section.

A clamping member may be provided to retain the weight on the bar.

According to a second aspect of the present invention there is provided a weight for connection to a bar of weightlifting apparatus, the weight being substantially disc-shaped and having a substantially flat peripheral edge portion.

According to a third aspect of the present invention there is provided weightlifting apparatus comprising a bar and at least one weight removably supportable on each end of the bar, the weight having an aperture in which the bar is received, the weight and bar having co-operating surfaces that serve to retain the weight on the bar in a predetermined angular orientation.

This aspect of the invention eliminates the tendency for the weight to rotate relative to the bar. In prior art designs this tends to occur when the members fixing the weight to the bar work loose.

A specific embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of the weightlifting apparatus of the present invention;

Figure 2 is a partially cut-away perspective view of one embodiment of the bar of the present invention shown with grip and end bungs in an exploded configuration;

Figure 3 is a partially cut-away perspective view of an alternative embodiment of the bar of the present invention shown with grip and end bungs in an exploded configuration;

Figures 4a and 4b show a sectioned end view and a front view respectively of the weight disc of the present invention;

Figures 5a to 5d are, respectively, front and plan views and front and end sections of a sleeve for connection to a weight disc of the present invention;

Figures 6a to 6c are, respectively, front, side and side sectioned views of an insert for connection to the bar and weight disc of the present invention;

Figure 7 is a perspective part cut-away view of a clamp member for use with the bar and weight disc of the present invention; and

Figure 8 is a perspective view of one end of the weightlifting apparatus of the present invention shown with a plurality of weight discs mounted on one end of the bar.

Referring now to figure 1 of the drawings, the exemplary weightlifting apparatus comprises an elongate rigid bar 10 with a weight 11 in the form of a disc plate mounted thereon towards each end. In use the bar 10 is grasped centrally so that the weights flank the users body.

Each weight 11 is generally disc-shaped with a major part of the periphery being circular. A minor portion 12 of the peripheral edge of the weight is flat along a line that effectively forms a chord to the circle described by the disc periphery. The

flat edge 12 of the weight 11 provides allows the apparatus to be support on a flat surface such as a table or the floor without risk of it rolling.

Each of the disc weights 11 has a central aperture for receipt of the bar 10 and an associated clamping member 13 that is used to retain the weight 11 on the bar 10.

One embodiment of the bar 10, shown in figure 2, has a predominantly hollow cylindrical cross section. Towards each end, the bar 10 has a flattened edge 14 so as to define a D-shape in cross section. It is here that the weights 11 are supported. The bar 10 terminates at each end in a knob 15 that supports a rubber bung 16 in a snap fit relationship. The central portion of the bar 10 at least is covered with a moulded rubber sleeve grip 17 formed from two half cylinder sections.

In an alternative embodiment shown in figure 3 the bar 10' is substantially D-shaped in cross section throughout its length. A D-shaped rubber bung 16' is inserted in each open end of the bar. In this design the weights can be supported at any desired position along the longitudinal axis of the bar.

The weight disc 11 is shown in detail in figures 4a and 4b. The disc has a machined central circular aperture 20 for receipt of the bar via an intermediate collar that is described below. The flat edge 12 of the disc 11 can be optionally fitted (as illustrated in figure 1) with a sleeve 21 of protective material such as, for example, rubber. The sleeve, shown in figures 5a to 5d, has parallel front and rear walls 23, a base wall 24 and curved end walls 25. The top is open for receipt of the disc 11 that is designed to be a friction fit with the sleeve. The internal surfaces of the end walls 25 have internal ribs 22 to provide grip. In use, the sleeve 21 prevents damage to or marking of the surface on which the weightlifting apparatus is supported. In alternative embodiments not shown here the flat edge 12 of the weight may simply be coated with an appropriate protective material. Branding or other advertising material may be marked on the exterior surface of front wall of the sleeve as indicated by reference numeral 40 in figure 1.

The collar illustrated in figures 6a to 6c and referred to above, provides the interface between the circular aperture 20 in the disc weight 11 and the D-shaped cross section of the bar 10. It has a spigot portion 30 for insertion into the aperture 20 of the disc 11. The spigot 30 defines an outer annular surface 31 that is a friction fit

with the internal surface of the weight disc aperture 20 and a flange 32 extending radially therefrom at one end. The collar has a central aperture 33 that is D-shaped in cross section and sized to be a sliding fit on the bar 10. A collar may be inserted into each side of the disc aperture.

The clamping member 13 serves to prevent the weight disc 11 sliding off the end of the bar 10. In the example embodiment illustrated in figure 7 the clamping member 13 comprises a housing 41 (shown partially cut-away) defining a circular bore 42 fitted with a compression-moulded elastomeric liner 43 (shown partially cut-away) and a manually operated lever 44. The internal surface 45 of the elastomeric liner 43 defines a D-shaped opening bore 46 for co-operating with the D-shaped exterior surface of the bar 10. The lever 44 comprises an elongate arm 47 that is connected perpendicularly to a generally cylindrical clamping element 48 rotatably disposed in the housing 41. The clamping element 48 extends across the housing bore 42 such that its longitudinal axis is perpendicular to the longitudinal axis of the bore. A part of the exterior surface of the clamping element 48 is recessed to define a flat surface 49. The lever 44 is pivotable so as to rotate the clamping element 48 between a first clamping position in which the cylindrical surface of the element 48 extends into the housing bore 42 and a second release position in which the recess 49 is brought into register with the bore 42 and does not project therein. In use, a weight 11 is mounted on the bar 10 followed by the clamping member 13. The lever 44 is pivoted to the clamping position whereupon the elastomeric liner 43 is compressed against the bar 10 by the clamping element 48 so as to clamp the housing 13 to the bar 10 and prevent axial movement of the weight 11. In order to remove, replace or add a weight 11, the lever 44 is pivoted to the release position so as to enable removal of the clamping member 13.

Figure 8 shows an embodiment whereby several weight discs 11a, 11b, and 11c are disposed at one end of the weightlifting bar 10. The provision of D-shaped apertures in the collars 30 ensures that all of the weights 11a,b,c and therefore their flat edges 12 are maintained in alignment on both ends of the bar 10.

The provision of a flat edge on the disc permits the apparatus to be stored on a flat surface such as a floor or a table without risk of it rolling. This eliminates the requirement for a separate supporting cradle.

The collar 30 prevents relative rotation of the weights 11 on the bar by virtue of the co-operation of the flat portions of the D-shaped aperture 33 in the collar and the bar 10. The flat portions ensure that the weights can only be positioned on the bar in a predetermined angular orientation so that the flat edges 12 of the discs are always aligned. It is to be appreciated that any configuration of co-operating surfaces may be adopted to ensure that the weight is retained on the bar in a predetermined angular orientation.

It is to be appreciated that the collar is not an essential feature of the invention. It may be possible to produce efficiently a weight disc that has a central D-shaped that mounts directly on to the bar.

It will be appreciated that numerous modifications to the above described design may be made without departing from the scope of the invention as defined in the appended claims. For example, the clamping member may be mounted on a circular bar or at least a portion that is of circular cross section. In this instance the internal bore of the elastomeric liner will be of circular configuration. Moreover, the flat edge of the weight can be used on weightlifting apparatus in which the weights are fixed or integral with the bar. The invention has application to hand weights as well the conventional weightlifting apparatus illustrated in the figures. Finally it is to be noted that the shaped of the aperture in the weight does not necessarily have to be a D-shape, it can alternatively take any suitable form provide it has a surface that corresponds with a surface on the bar to prevent it from rotating relative to the bar, such as, for example, triangular or square.

CLAIMS

1. Weightlifting apparatus comprising a bar and at least one weight removably supportable on each end of the bar, the weight being substantially disc-shaped and having a substantially flat peripheral edge portion so that it may be supported on a flat surface without rolling.
2. Weightlifting apparatus according to claim 1, wherein the weight has an aperture in which the bar is received, the weight and bar having co-operating surfaces that serve to retain the weight on the bar in a predetermined angular orientation.
3. Weightlifting apparatus according to claim 2, wherein the co-operating surface of the weight is defined on a removable interface member that is connected into the aperture of the weight.
4. Weightlifting apparatus according to claim 1 or 2, wherein the aperture in the weight is substantially D-shaped.
5. Weightlifting apparatus according to claim 3, wherein the aperture in the weight is substantially circular and the removable interface member has a substantially circular outer surface and a substantially D-shaped aperture.
6. Weightlifting apparatus according to any preceding claim, wherein the bar has at least a portion that has a D-shaped cross section.
7. Weightlifting apparatus according to any preceding claim, wherein there is provided a clamping member to retain the weight on the bar.
8. Weightlifting apparatus according to claim 7, wherein the clamping member has a clamping element that is movable between a clamping

configuration where the weight is retained on the bar and a released configuration wherein the weight may be removed from the bar.

9. Weightlifting apparatus according to claim 8, wherein the clamping member further comprises a lever for moving said clamping element between said clamping and released positions.
10. Weightlifting apparatus according to claim 9, wherein the clamping member comprises a housing having a aperture for receipt of the bar and the clamping element is disposed at least in part in said housing, the clamping element comprising a rotary member that in said clamping configuration extends into said aperture to clamp against said bar and in said release position is clear of said aperture.
11. Weightlifting apparatus according to claim 10, wherein the clamping member further comprises a resilient material disposed over said rotary member, the material being compressed between said rotary member and said bar when in the clamping configuration.
12. Weightlifting apparatus according to any preceding claim wherein said flat peripheral edge is covered in a protective material.
13. A weight for connection to a bar of weightlifting apparatus, the weight being substantially disc-shaped and having a substantially flat peripheral edge portion.
14. Weightlifting apparatus comprising a bar and at least one weight removably supportable on each end of the bar, the weight having an aperture in which the bar is received, the weight and bar having co-operating surfaces that serve to retain the weight on the bar in a predetermined angular orientation.

15. Weightlifting apparatus according to claim 14, wherein the co-operating surface of the weight is defined on a removable interface member that is connected into the aperture of the weight.
16. Weightlifting apparatus according to claim 14 or 15, wherein the co-operating surface of the weight is defined by at least one wall that defines said aperture in the weight or the interface.
17. Weightlifting apparatus according to claim 14, wherein the aperture in the weight is substantially D-shaped.
18. Weightlifting apparatus according to claim 16, wherein the aperture in the weight is substantially circular and the removable interface member has a substantially circular outer surface and a substantially D-shaped aperture.
19. Weightlifting apparatus according to any one of claims 14 to 18, wherein the bar has at least a portion that has a D-shaped cross section.
20. Weightlifting apparatus substantially as hereinbefore described with reference to the accompanying drawings.
21. A weight for connection to a bar of weightlifting apparatus substantially as hereinbefore described with reference to the accompanying drawings.



Application No: GB 0301048.5
Claims searched: 1-13

Examiner: Paul Makin
Date of search: 22 March 2004

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X:Y	X:1 Y:2-8	US 6142918	(LIU) see particularly Figure 1 and flats 28
Y	2-6	US 5102124	(DIODATI) see particularly the aperture 18 and bar 14
Y	2,3	US 5484367	(MARTINEZ) see particularly the key 26 and aperture 30
Y	7,8	GB 2186500 A	(GYMPAC SYSTEMS) see the clamp in Figures 5 and 6

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^w:

A6M

Worldwide search of patent documents classified in the following areas of the IPC⁷:

A63B

The following online and other databases have been used in the preparation of this search report:

WPI, EPODOC, JAPIO